



Union Internationale des Sciences Biologiques

ORGANISATION INTERNATIONALE DE LUTTE BIOLOGIQUE CONTRE LES ANIMAUX ET LES PLANTES NUISIBLES

International Union of Biological Sciences

INTERNATIONAL ORGANIZATION FOR BIOLOGICAL CONTROL OF NOXIOUS ANIMALS AND PLANTS

RECEIVED JUN 4 1982
Circulate

Don
RJB
ELM
BR

Secretary-General : G. MATHYS
1, rue Le Nôtre
75016 PARIS (France)

June 2, 1982

Dr. O. H. Graham
Research Leader
Screwworm Research Laboratory
P.O. Box 986
Moore Air Base
Mission, TX 78572

Dear Hugh:

As I promised in our conversation today, here is some explanation of the project I described. I have been commissioned by the International Organization for Biological Control (IOBC) to form a global working group on quality control of insects mass-produced for strategic releases. Our hope for a productive international group results from successful execution by my co-chairman, Dr. Ernst Boller, of a regional working group (Europe) on quality control in fruit flies. This letter invites your participation. Our primary objectives are communication through meetings and correspondence, coordination of research, development and application, and training in the principles and practices of quality control.

As our initial endeavor as a working group, we plan to use as a basis for discussion our on-going effort in Gainesville to implement quality control protocols for mass-rearing Diptera and Lepidoptera, and to systematize the treatment of production and quality control data using computers. Discussion of research will be complemented by review and analysis of the quality control practices employed by most of the major insect production facilities involved in sterile-insect release programs world-wide. Thus, we hope to hold a workshop in Gainesville in August of 1982 for scientists, rearing managers and technicians from fly and moth rearing programs and laboratories. A few specialists working with other groups of insects are being invited to participate. Participants will have opportunity to review the state of the art in insect quality control, discuss its implementation in the projects for suppression of pests with release of genetically-altered insects in Japan, Taiwan, Australia, Latin America, the U. S. and Europe and to meet the persons responsible for quality control in these programs and the research laboratories that support them.

The meeting format will be primarily informal, to provide maximum opportunity for exchange of ideas and information. We have planned to conclude with travel, by those who are able, to Tapachula, Mexico, to view and analyze quality control at the Joint U. S./Mexico Medfly Project.

Clearly, the screwworm project is such an important aspect of massive insect rearing that representation is important to us. I believe the meeting will provide important contacts and information to you or your delegate. Emphasis on computerized data-base analysis might be particularly useful.

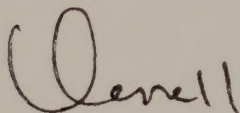
The tentative schedule is:

- August 23 - Arrive in Gainesville
- August 24-27 - Workshop meetings
- August 28-29 - Field studies in Florida
- August 30-31 - Travel to Mexico City
- Sept. 1-5 - Tours and discussion in Southern Mexico

If screwworm project personnel can participate in the meeting in Gainesville, it would be very useful and interesting to travelling participants to visit the screwworm plant.

Your comments on this proposal will be appreciated, and I hope very much for representation from ARS screwworm activities.

Under separate cover I am sending a few publications that describe our current approach to quality control.



D. L. CHAMBERS
Chairman, Global Working Group on
Quality Control
USDA/ARS
Attractants Laboratory
P.O. Box 14565
Gainesville, FL 32604

cc:

E. F. Boller



THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TEXAS 78712

circulate
D.R.
R.D.B.
Don

Department of Zoology

June 4, 1982

Dr. R. C. Bushland
1514 Xanthisma
McAllen, Texas 78501

Dear Bush:

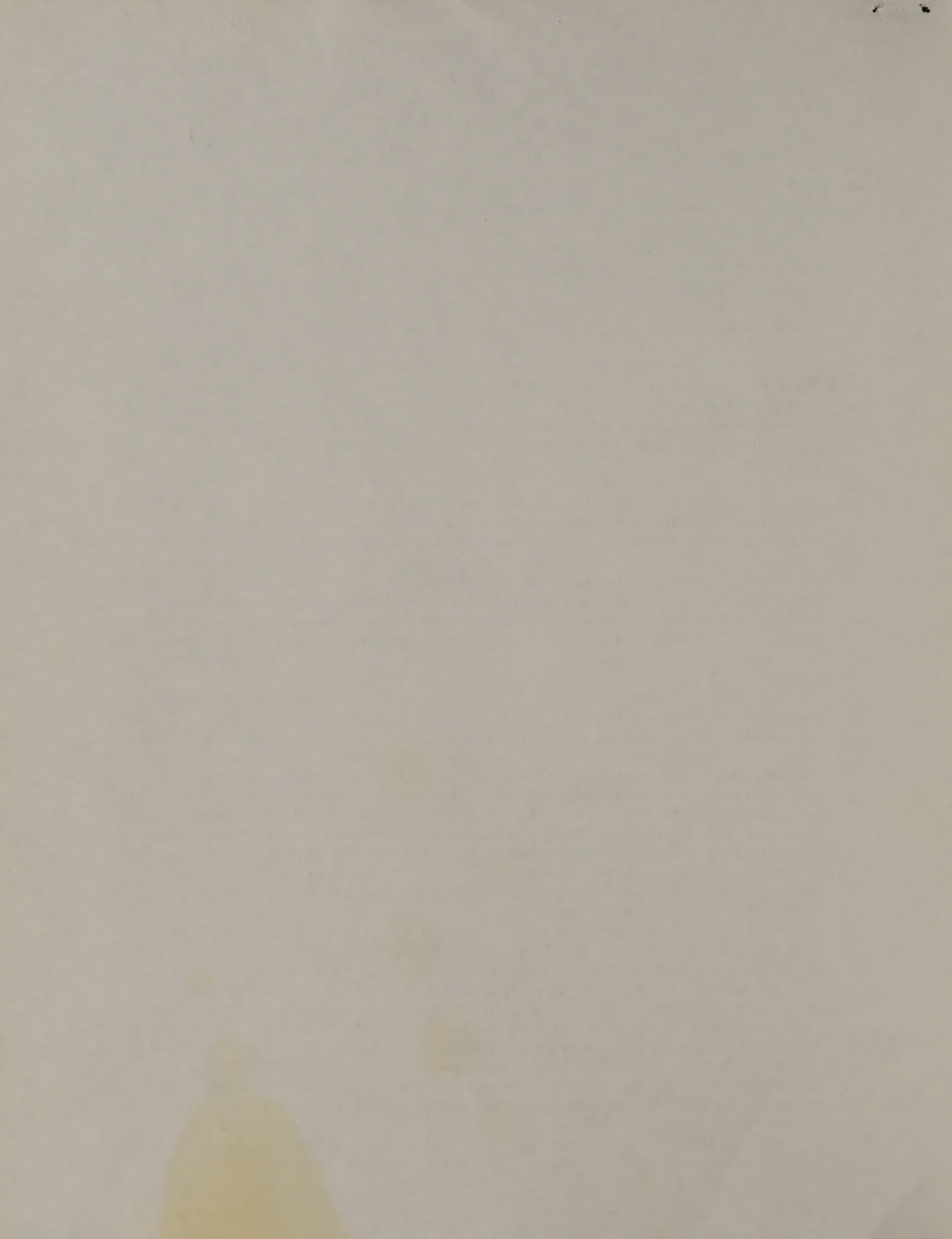
We realize that you are much better informed about our work than most of the Directors of SWAHRF, but we wish to keep you abreast of our current views. We appreciate the time and advice you have given us, and hope you do not find many faults with our work. Of course, it opens up more questions than are answered, and we are hoping to continue this research.

Enclosed is a reprint of our recent article published in SCIENCE. It summarizes our screwworm research since 1978. We were able to initiate this research with financial assistance from SWAHRF, The Perry Foundation, and with the cooperation of many producers in Texas, New Mexico, Arizona and California. The Texas Animal Health Commission and several individuals of the USDA/APHIS groups were very helpful as well. Because of the support by particular producers we were eventually able to obtain USDA/ARS financial support and extended our research into Mexico.

To make a long story short, we have analyzed about 18% of the material we have collected, and have a good idea of the general pattern of genetic diversity of screwworms. The USDA terminated support of this work last fall, and several individuals have been reluctant to accept our analyses. However, their reluctance is not common among other biologists. After our work and plans underwent extensive peer review, we were recently notified that the National Science Foundation intended to fund our lab to pursue further analyses of screwworms. Likewise, the Office of Health and Environmental Research of the Department of Energy continues to support our theoretical work on the dynamics of stressed populations. (Screwworms are under great stress by this program.)

We have emphasized our theoretical studies that are related to screwworm eradication. It was interesting to find out that the sterile fly technique was much more powerful than expected from earlier work, including that by Dr. Knipling. Properly done, this biological control technique eliminates populations quickly and with fewer sterile flies than have ever been used. We saw a field demonstration of this power in the studies conducted cooperatively with the USDA/ARS in southeastern Chiapas. The results were summarized in our paper in SCIENCE (see Figure 9). Since this power has not been seen to date in the screwworm program, there is more room for improvement than we realized!

The initial results suggest that a 50% to 75% or more reduction in the release rate could still be effective in eradicating outbreaks.



While we aren't suggesting that a cut this great be made without further testing, it is clear that inadequate mating between sterile and wild flies is a factor that cannot be ignored. Inadequate mating appears to be a pivotal issue for conducting an effective program at a minimal cost.

Our survey of southern regions of Mexico, indicates that the natural genetic diversity of types of screwworms is greater than in the north. (Part of the northern diversity has been removed by successful eradication.) We observed an important new type of diversity in the south that poses an ominous threat -- asexual reproduction. This possibility has not been proven, and it is unlikely to be fully understood until a serious attempt is made to culture these new kinds of flies. However, the most likely interpretation for four separate samples indicates that there is a significant proportion of screwworm females that can reproduce either sexually or asexually, without a need for viable sperm. If all the sexually reproducing competitors are removed, and asexually reproducing types began to expand their range northward, we could have an invasion of screwworms that fails to respond to the sterile fly method of eradication. In such an event, we may be back to EQ335 and cowhands, if we can find them.

There is a lot more research needed on the genetics and ecology of screwworm flies before we can reasonably predict the consequences of eradication further south. Research facilities have proven to be grossly inadequate for serious genetic research on screwworms. A recent review of screwworm research by three outstanding geneticists resulted in their primary recommendation that adequate facilities be constructed and made available to any scientists wishing to study screwworms. We enthusiastically endorse this recommendation, and hope that it receives a very high priority. Many earlier problems and the controversies between several USDA/ARS people and ourselves could have been avoided had there been adequate facilities and properly trained research staff.

We continue to be concerned about discussions of extending the eradication further into Central America. Until there is some modicum of assurance that we won't make a bigger problem than ever before as a direct result of an excessively ambitious eradication program, we believe the Isthmus of Tehuantepec is a reasonable place to stop, and then we can consider the options very carefully. Not only will we have a barrier all the way across Mexico separating us from overwintering screwworms, but we can begin to consider a way to protect ourselves from eventual reintroduction of any type of screwworm over the next several decades. We cannot depend on the current SWASS formulation to work on introductions. It does not work well in southern Mexico, nor can we expect it to work on other species from other parts of the world.

A moderate sized sterile fly factory held in readiness and combined with an early warning monitoring by state agencies as well as the USDA has several attractive features. If fewer flies need to be dropped than we once thought, then we need a much smaller factory than either at Tuxtla or the old factory at Mission. A factory population matching that causing an outbreak can be produced when needed from collections made from the outbreak. A smaller facility would be less expensive than



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Oklahoma-Texas Area

Mr. Graham
Screwworm Research
P. O. Box 986
Mission, TX 78572

June 14, 1982

SUBJECT: Genetic Characteristics of Screwworms Collected in South Texas
in May 1982.

TO: Dr. Nazario Pineda V., Director
Dr. R. E. Reichard, Acting Co-Director
Comision Mexico-Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20 - 12^o Piso
Apartado Postal M-2890
Mexico, D.F. 06000

Dr. D. O. McInnis, Research Geneticist in this laboratory, was, through the cooperation of APHIS and TAHC livestock inspectors, able to obtain specimens from the recent Texas cases which were suitable for chromosome analysis. As he indicates in the enclosed copy of a report, the field collected larvae had two characteristics which have not been seen in V-81 larvae. This negative evidence is not conclusive, however, and it would be impossible to prove that an unknown was derived from V-81 strain as the chromosome types which have been seen in V-81 have also been seen in wild flies.

It is unfortunate that Dr. McInnis was not able to study the chromosomes of some of the larvae which were collected in Soto la Marina earlier this year.

O. H. Graham

O. H. GRAHAM
Location/Project Leader

Enclosure

cc: Norvan Meyer (w/enclosure)
Floyd Smith (w/enclosure)
H. C. Hofmann (w/enclosure)
W. H. Sudlow (w/enclosure)
R. A. Hoffman "
R. A. Bram "
C. J. Whitten "
H. E. Brown "



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Oklahoma-Texas Area

Dr. Graham
Screwworm Research
P. O. Box 986
Mission, TX 78572

June 14, 1982

SUBJECT: Chromosome Analysis of U.S. Screwworm Cases (May, 1982).

TO: Dr. Hugh Graham, Research Leader

Three of the 4 confirmed screwworm cases collected in Texas between May 18 and May 21, 1982 were sampled as early or late 3rd instar larvae for genetic analysis. These larvae were dissected and their chromosomes examined with the following results.

No new chromosome types were found; however, a fluorescent 2nd chromosome type noted has been relatively rare in previous samples of native screwworms. All 3 larval samples possessed this 2nd chromosome type as well as a single kind of Y chromosome. Along with circumstantial evidence from the timing and location of the field collections, the chromosome data provide strong, negative evidence that the screwworm flies involved were closely related, perhaps sisters (a single native fly almost certainly did not lay all 4 egg masses involved over a 4 da. period).

The fluorescent 2nd chromosome and the Y type found in the screwworm case samples have not been found in any early or recent samples of the factory strain, V-81. Therefore, the chromosome data provide strong evidence that the screwworm flies causing the recent U.S. cases were not related to V-81. Because V-81 does not have unique chromosomes that are not found in some native flies, it would be impossible to prove that the larval samples were derived from V-81. However, the converse is true, i.e. native flies may possess chromosome types not found in V-81 and, indeed, this appears to be the case here. This type of inference would apply to any analyses made from isozyme or morphological patterns as well. Larval samples have been sent to both the Univ. of Texas and ARS Fargo, N.D. labs following separate requests for material to perform isozyme analyses. Finally, because the chromosome types found in screwworms to date have been widespread over areas of Mexico, it is not possible to pinpoint a likely source for the recent cases. Unfortunately, no larval samples were analyzed from the recent outbreak in Soto la Marina, Mex. - some 100 miles distant and the nearest known recent infestation to antedate the Texas cases. The fluorescent 2nd chromosome has been found previously in populations from southern and western Mexico. It has not been noted in material from eastern Mexico but new samples from this broad area have not been studied since July, 1980.

Donald O. McInnis
DONALD O. MCINNIS
Research Geneticist

cc: Dr. R. Hoffmann, College Station, TX (1)
Dr. C. J. Whitten, Fargo N. D. (1)
Tuxtla Laboratory Scientists (3)
Mission Laboratory Scientists (3)



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Oklahoma-Texas Area

Dr. Graham
Screwworm Research
P. O. Box 986
Mission, Texas

June 15, 1982

FOREIGN TRAVEL REPORT

1. Traveler. O. H. Graham, Supervisory Entomologist, Screwworm Research Laboratory, USDA, ARS, Mission, Texas. NRP 20480. Traveler was accompanied by L. E. La Chance NTA for Insect Genetics, and R. C. Bushland, Collaborator.
2. Countries Visited. Mexico, June 3 thru 8, 1982.
3. Purpose of Trip. To make detailed plans for the implementation of genetic research on isofemale lines and other items recommended by the Technical Panel for the Study of Reproductive Isolation in Screwworm Populations. Since neither Dr. La Chance nor Dr. Bushland had previously visited Tuxtla Gutierrez, the trip served to acquaint them with the overall operation of the eradication program and the ARS research, both ongoing and planned.
4. Summary. On June 3 we visited the Joint Commission's office in Mexico City and discussed current program status and problems with Drs. Reichard, Judy and Hofmann. Eradication program managers are currently quite concerned about the infestations that have occurred in Mexico near Del Rio, Texas and in South Texas along the line between Starr and Hidalgo Counties. Field Operations (the Epidemiologists and the Livestock Inspectors) and the Distribution Centers are apparently continuing to function efficiently but the quantity and quality of sterile flies are inadequate to prevent screwworms from moving north when weather conditions are highly favorable, as they have been for more than a month. Efforts are made to examine and treat all livestock moving north from screwworm-infested zones, but everyone presumes those efforts are only partially successful.

On June 4 we visited the ARS laboratory in Tuxtla Gutierrez and discussed current activities with Drs. John Spencer and Pete Peterson and Biologist Maria Elena Vasquez. The single egg mass lines collected in Michoacan and Colima by Dr. McInnis and Mr. Garcia are progressing well, and as soon as they are a little better synchronized, the first crosses for the new Micholima strain will be made. Isofemale lines established by Dr. Mangan for use in mating isolation studies are also in culture as well as some lines established to search for mutants in the factory strain.

During a visit to the production plant we found that the house fly problem was less severe than last year and that the plant was clean. The most severe deficiency that we saw on the rearing floor, was failure of the workers to level the linters in the larval vats; as a result, many larvae were not feeding or were drowning. In contrast, the new Arriaga strain was being reared in the Methods suites with careful attention to all detail.

We drove from Tuxtla Gutierrez to Tapachula and on June 7 we visited the Medfly rearing plant at Metapa. We left with nothing but praise for the overall efficiency of the operation and the accomplishments of that group.

The afternoon was spent with Don Hopkins who showed us the field test he and Dr. Rick Brenner are carrying out in southeastern Chiapas. This test was designed to reduce the cost of evaluating new fly strains (or new treatments of any kind) in the field and the experimental plan was quite impressive. Because of interruptions in the shipment of sterile screw-worm pupae from Tuxtla to Tapachula they had not at that time been able to establish a population of sterile flies in the test area.

O. H. Graham

O. H. GRAHAM

Location/Project Leader

Distribution

15 copies to AD

copy to Norman Meyer
Floyd E. Smith R. E. Richard
" W. H. Sudlow
" R. E. Lowe

H. C. Hofmann

H. E. Brown

J. P. Spenger C. J. Whitten
R. C. Bushland

circulate at Mission .. L. E. LaChance

J. W. Snow

R. A. Bram

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P. O. Box 986
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June 15, 1982

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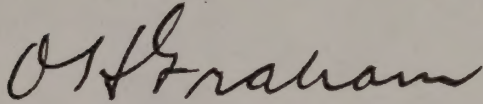
- RJB*
Rhm
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O. H. GRAHAM

Location/Project Leader

cc: Area Office
Norvan Meyer
Floyd E. Smith
R. E. Reichard
J. P. Spencer
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R. E. Lowe
W. H. Sudlow
H. E. Brown
L. E. LaChance
J. W. Snow
C. J. Whitten
R. C. Bushland
R. A. Bram

McInnis
Ring
Brenner
Mangan

Sent to Roger Drummond
on COMET telnet
06/17/82

NRP 20480 - Screwworm Research
Laboratory, Tuxtla Gutierrez,
Mexico

Activities of the Category I research scientists

1. D.O. McInnis, Research Geneticist.
Searches for genetically distinct screwworm populations in Mexico and establishes isofemale lines in the laboratory. Uses cytological, ~~and~~ electrochemical and conventional taxonomic technologies to determine distinctive characteristics of several populations and uses recognized genetic technologies to study the inheritance of ~~the~~ each characteristic. Studies the reproductive biology of screwworms and mating behavior in the laboratory. Develops new and improved methods of determining the age, fertility, mating status and other characteristics of field-collected screwworms.
2. John P. Spencer, Research Entomologist.
Conducts field evaluations of the mating ability, survival, and dispersal of new strains of screwworms. Surveys the screwworm problem in new areas of Mexico and Central America where the species has not been previously studied.

Your social security number

If you received more than \$400 in interest or you received any interest from an All-Savers Certificate, you must complete Part I and list ALL interest received. Also complete Part III if you received more than \$400 in interest. See page 8 of the Instructions to find out what interest to report. Then answer the questions in Part III, below. If you received interest as a nominee for another, or you received or paid accrued interest on securities transferred between interest payment dates, please see page 20 of the Instructions.

[illegible]

If you received more than \$400 in gross dividends (including capital gain distributions) and other distributions on stock, complete Part II and Part III. Please see page 9 of the Instructions. Then answer the questions in Part III, below. If you received dividends as a nominee for another, please see page 21 of the Instructions.

[illegible]

Note: If you received capital gain distributions for the year and you do not need Schedule D to report any other gains or losses or to compute the alternative tax, do not file that schedule. Instead, enter 40% of your capital gain distributions on Form 1040, line 13.

If you received more than \$400 of interest or dividends, OR if you had a foreign account or were a grantor of, or a transferor to, a foreign trust, you must answer both questions in Part III. Please see page 21 of the instructions.

9 At any time during the tax year, did you have an interest in or a signature or other authority over a bank account, securities account, or other financial account in a foreign country?	Yes	No
10 Were you the grantor of, or transferor to, a foreign trust which existed during the current tax year, whether or not you have any beneficial interest in it?		
If "Yes," you may have to file Forms 3520, 3520-A, or 926.		

For Paperwork Reduction Act Notice, see Form 1040 Instructions.

Studies the influence of natural mortality factors on the survival of screwworm pupae in a variety of ~~ecological zones~~ tropical habitats. Evaluates new insecticides for screwworm control.

3. J. W. Mockley, Research Entomologist.

Studies the role of chemical cues in the biology and behavior of the screwworm with emphasis on response in tropical regions. Research on synthetic screwworm attractants emphasizes the enhancement of swarm lure. The role of flowers in the nutrition and mating behavior of screwworm adults is also being studied. ~~new~~ and also searches for new and improved oviposition attractants and stimulants.

4. R. D. Peterson, II, Research Entomologist.

Responsible for the establishment, amplification, and maintenance of new screwworm strains in the research laboratory until they are transferred to the mass production facility. Studies various aspects of screwworm reproductive biology such as male mating capacity under a variety of conditions. Carries

Schedules A&B
(Form 1040)

Department of the Treasury
Internal Revenue Service (2)

Schedule A—Itemized Deductions

(Schedule B is on back)

▶ Attach to Form 1040. ▶ See Instructions for Schedules A and B (Form 1040).

OMB No. 1545-0074

1981
07

Name(s) as shown on Form 1040

Your social security number

Medical and Dental Expenses (Do not include expenses reimbursed or paid by others.) (See page 17 of Instructions.)

- 1 One-half (but not more than \$150) of insurance premiums you paid for medical care. (Be sure to include in line 10 below.) ▶
- 2 Medicine and drugs
- 3 Enter 1% of Form 1040, line 31
- 4 Subtract line 3 from line 2. If line 3 is more than line 2, enter zero
- 5 Balance of insurance premiums for medical care not entered on line 1
- 6 Other medical and dental expenses:
- a Doctors, dentists, nurses, etc.
- b Hospitals
- c Transportation
- d Other (itemize—include hearing aids, dentures, eyeglasses, etc.) ▶
- 7 Total (add lines 4 through 6d)
- 8 Enter 3% of Form 1040, line 31
- 9 Subtract line 8 from line 7. If line 8 is more than line 7, enter zero
- 10 Total medical and dental expenses (add lines 1 and 9). Enter here and on line 33 . ▶

Taxes (See page 18 of Instructions.)

- 11 State and local income
- 12 Real estate
- 13 a General sales (see sales tax tables)
- b General sales on motor vehicles
- 14 Personal property
- 15 Other (itemize) ▶
- 16 Total taxes (add lines 11 through 15). Enter here and on line 34 ▶

Interest Expense (See page 18 of Instructions.)

- 17 Home mortgage
- 18 Credit and charge cards
- 19 Other (itemize) ▶
- 20 Total interest expense (add lines 17 through 19). Enter here and on line 35 ▶

Contributions (See page 19 of Instructions.)

- 21 a Cash contributions (If you gave \$3,000 or more to any one organization, report those contributions on line 21b)
- b Cash contributions totaling \$3,000 or more to any one organization (show to whom you gave and how much you gave) ▶
- 22 Other than cash (see page 19 of Instructions for required statement)
- 23 Carryover from prior years
- 24 Total contributions (add lines 21a through 23). Enter here and on line 36 ▶

Casualty or Theft Loss(es) (You must attach Form 4684 if line 29 is \$1,000 or more, OR if certain other situations apply.) (See page 19 of Instructions.)

- 25 Loss before reimbursement
- 26 Insurance or other reimbursement you received or expect to receive
- 27 Subtract line 26 from line 25. If line 26 is more than line 25, enter zero
- 28 Enter \$100 or amount from line 27, whichever is smaller
- 29 Total casualty or theft loss(es) (subtract line 28 from line 27). Enter here and on line 37 ▶

Miscellaneous Deductions (See page 19 of Instructions.)

- 30 a Union dues
- b Tax return preparation fee
- 31 Other (itemize) ▶
- 32 Total miscellaneous deductions (add lines 30a through 31). Enter here and on line 38 ▶

Summary of Itemized Deductions
(See page 20 of Instructions.)

A

- 33 Total medical and dental—from line 10
- 34 Total taxes—from line 16
- 35 Total interest—from line 20
- 36 Total contributions—from line 24
- 37 Total casualty or theft loss(es)—from line 29
- 38 Total miscellaneous—from line 32
- 39 Add lines 33 through 38
- 40 If you checked Form 1040, Filing Status box:
2 or 5, enter \$3,400
1 or 4, enter \$2,300
3, enter \$1,700
- 41 Subtract line 40 from line 39. Enter here and on Form 1040, line 32b. (If line 40 is more than line 39, see the Instructions for line 41 on page 20.) ▶

out tests designed to improve the screwworm
adult suppression system (SWASS) in the
tropics and to develop a long term form
of SWASS such as a bait station. Elucidates
factors which control fecundity in colonized
screwworm flies.

Tax Computation

(See Instructions on page 12)

- 32a Amount from line 31 (adjusted gross income)
- 32b If you do not itemize deductions, enter zero
If you itemize, complete Schedule A (Form 1040) and enter the amount from Schedule A, line 41
- Caution:** If you have unearned income and can be claimed as a dependent on your parent's return, check here ☐ and see page 12 of the Instructions. Also see page 12 of the Instructions if:
- You are married filing a separate return and your spouse itemizes deductions, OR
 - You file Form 4563, OR
 - You are a dual-status alien.
- 32c Subtract line 32b from line 32a
- 33 Multiply \$1,000 by the total number of exemptions claimed on Form 1040, line 6e
- 34 Taxable Income. Subtract line 33 from line 32c
- 35 Tax. Enter tax here and check if from ☐ Tax Table, ☐ Tax Rate Schedule X, Y, or Z, ☐ Schedule D, ☐ Schedule G, or ☐ Form 4726
- 36 Additional Taxes. (See page 13 of Instructions.) Enter here and check if from ☐ Form 4970, ☐ Form 4972, ☐ Form 5544, or ☐ Section 72(m)(5) penalty tax
- 37 Total. Add lines 35 and 36

32a

32b

32c

33

34

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36

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Credits

(See Instructions on page 13)

- 38 Credit for contributions to candidates for public office
- 39 Credit for the elderly (attach Schedules R&RP)
- 40 Credit for child and dependent care expenses (attach Form 2441)
- 41 Investment credit (attach Form 3468)
- 42 Foreign tax credit (attach Form 1116)
- 43 Work incentive (WIN) credit (attach Form 4874)
- 44 Jobs credit (attach Form 5884)
- 45 Residential energy credit (attach Form 5695)
- 46 Total credits. Add lines 38 through 45
- 47 Balance. Subtract line 46 from line 37 and enter difference (but not less than zero)

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Other Taxes

(Including Advance EIC Payments)

- 48 Self-employment tax (attach Schedule SE)
- 49a Minimum tax. Attach Form 4625 and check here ☐
- 49b Alternative minimum tax. Attach Form 6251 and check here ☐
- 50 Tax from recomputing prior-year investment credit (attach Form 4255)
- 51a Social security (FICA) tax on tip income not reported to employer (attach Form 4137)
- 51b Uncollected employee FICA and RRTA tax on tips (from Form W-2)
- 52 Tax on an IRA (attach Form 5329)
- 53 Advance earned income credit (EIC) payments received (from Form W-2)

48

49a

49b

50

51a

51b

52

53

06

- 54 Total tax. Add lines 47 through 53

54

Payments

Attach Forms W-2, W-2G, and W-2P to front.

- 55 Total Federal income tax withheld
- 56 1981 estimated tax payments and amount applied from 1980 return
- 57 Earned income credit. If line 32a is under \$10,000, see page 15 of Instructions
- 58 Amount paid with Form 4868
- 59 Excess FICA and RRTA tax withheld (two or more employers)
- 60 Credit for Federal tax on special fuels and oils (attach Form 4136 or 4136-T)
- 61 Regulated Investment Company credit (attach Form 2439)
- 62 Total. Add lines 55 through 61

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Refund or Balance Due

- 63 If line 62 is larger than line 54, enter amount OVERPAID
- 64 Amount of line 63 to be REFUNDED TO YOU
- 65 Amount of line 63 to be applied to your 1982 estimated tax
- 66 If line 54 is larger than line 62, enter BALANCE DUE. Attach check or money order for full amount payable to "Internal Revenue Service." Write your social security number and "1981 Form 1040" on it. (Check ☐ if Form 2210 (2210F) is attached. See page 16 of Instructions.)

63

64

65

66

Please Sign Here

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. Declaration of preparer (other than taxpayer) is based on all information of which preparer has any knowledge.

▶ Your signature Date ▶ Spouse's signature (if filing jointly, BOTH must sign even if only one had income)

Paid Preparer's Use Only

Preparer's signature ▶ Date ▶ Check if self-employed ☐ Preparer's social security no. ▶

Firm's name (or yours, if self-employed) and address ▶ E.I. No. ▶ ZIP code ▶



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Oklahoma-Texas

circulate
Screwworm Research
P. O. Box 986
Mission, Texas 78572

June 17, 1982

SUBJECT: New Recommendations for the Use of Swormlure in Mexico

TO: Dr. Nazario Pineda V., Director
Dr. R. E. Reichard, Acting Co-Director
Comision Mexico-Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20-12^o Piso
Apartado Postal M-2890
Mexico, D.F. 06000

Don
R
RS

In an effort to enhance the attractiveness of swormlure, Drs. J. W. Mackley and H. E. Brown developed a new formulation which has since been field tested at several locations in Mexico. At Tuxtla Gutierrez, Dr. Mackley found that the new ZP-31 (hereafter referred to as swormlure-4) usually attracted 1.8X more sterile screwworms to wind-oriented traps (WOT's) than did SL-2. Near Manzanillo, SL-4 was 2.07X more attractive when the number of sterile flies was low (early March) and 1.68X more attractive when numbers were higher (late March). At Soto la Marina in April, the ratio was lower, 1.16 to 1, but favored SL-4. This lower ratio appeared to be due to much higher numbers of screwworms being trapped with SL-2 rather than due to a reduction in the effectiveness of SL-4. Similar results were obtained in a second test in Soto la Marina (1.12 to 1) in May and the incomplete results of an ongoing test in Starr County, Texas are quite similar (1.23 to 1). In no case have we had a test in which SL-4 was less attractive than SL-2. We will supply you with more detailed information when a report currently being prepared by Dr. Dennis R. Ring is complete.

The results mentioned above have been obtained by testing liquid swormlure in WOT's. Concurrent comparisons of pellets made with SL-2 and SL-4 indicate that SL-4 was at least 1.4X more attractive than SL-2, but the numbers were more variable, at least in part due to changes in the techniques used to test pellets that were made during the course of the tests.

Dr. Harold Brown and Mr. Paul Thompson have analyzed samples of all the materials used in the field tests and have compared the loss of each of the components of swormlure by day of exposure and by location. These data indicate that by increasing the proportion of the more volatile components, as is done in the SL-4 formulation, a product is obtained whose attractancy is sustained somewhat longer under tropical conditions when SL-2 is used as a standard of comparison. This change in relative attractancy is illustrated by some data from Soto la Marina:

<u>Formulation</u>	<u>No. Days</u> <u>1-2</u>		<u>No. Days</u> <u>3-4</u>	
	<u>No.</u> <u>flies</u>	<u>ratio</u>	<u>No.</u> <u>flies</u>	<u>ratio</u>
SL-2	1425		676	
SL-4	1287	0.9 to 1	1147	1.7 to 1

After studying the changes in the relative proportions of the individual components of swormlure, and having taken in consideration some of the practical aspects of swormlure and SWASS manufacture, Dr. Brown has prepared recommendations to Mr. Sudlow and Mr. Lefler for a swormlure-4 operation. The formulas that he has recommended are shown on enclosures 1 and 2. Dr. Brown has worked with the people here at Moore Field in the mixing of the first batches of SL-4 and will be available as a consultant if needed in the future. It will not be surprising if minor adjustments are needed to obtain the best final product.

We believe that it will be advantageous to the program, and I recommend that you replace swormlure-2 with swormlure-4. The new formulation is cheaper, \$20.76/gal. vs. \$23.21/gal, but the cost of pellets will not change (more SL-4 will go into the new pellets). It appears that the SL-4 pellet will be at least as good as the SL-2 pellet in all areas of northern Mexico and the U.S. and will be significantly more effective in some of the central and southern parts of Mexico. However, we also believe that we will be able to develop still better screwworm attractants in due time and that you should regard SL-4 as a stop - gap material to be used only until the better materials are available.

O. H. Graham

O. H. GRAHAM
Location/Project Leader

2 Enclosures

cc: w/encl.
Norvan Meyer
Floyd Smith
W. H. Sudlow
H. C. Hofmann
R. E. Lowe
R. A. Bram
J. W. Snow
C. J. Whitten
H. E. Brown
R. C. Bushland
J. P. Spencer
D. R. Ring

Brenner

McINNIS

Hangan

Enclosure 1.

Composition of Swormlure-4

Components	Percent V/V	Ml./Gal.	Gal. per 105 gal.
<u>sec</u> -butyl alcohol	18.7	710	20
<u>iso</u> -butyl alcohol	18.7	710	20
dimethyl disulfide	18.7	710	20
acetic acid	18.7	710	20
butyric acid	6.2	240	6.5
valeric acid	6.2	240	6.5
phenol	5.0	190	5
p-cresol	5.0	190	5
benzoic acid*	1.2 g.	50 g.	11 lbs.
indole*	1.2 g.	50 g.	11 lbs.

* solids whose specific gravity is here assumed to be 1.0

Enclosure 2.

Use of Swormlure-4 in the manufacture of SWASS pellets.

Swormlure - wax mixture:

75% SL-4

25% wax

Use 3 gallons (or 24 lbs.) of SL-4 and 8 lbs. (or 4800 ml.) of wax.

Place SL-4 in bucket, then add wax, with stirring, and immediately seal bucket.

Quantity of SWASS materials for one charge of mixer:

<u>Item</u>	<u>Percent</u>	<u>numbers of lbs. for one 1073 lbs. charge</u>
wax + SL-4	35	375*
dried blood	28	300
sugar	28	300
corn cob grits	7	75
Vapona	2	23

* Equal to, when handling loss is considered, 12 buckets of wax-SL-4, 32 lbs. per bucket.



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Oklahoma-Texas

Mr. Graham
Screwworm Research
P. O. Box 986
Mission, Texas 78572

June 18, 1982

Dr. D. L. Chambers
USDA, ARS, Attractants Laboratory
P. O. Box 14565
Gainesville, Florida 32604

Dear Derrell:

As mentioned in our telephone conversation, I very much appreciate your invitation to participate in your meeting on the quality control of mass-produced insects and the publications you so kindly enclosed. However, since receiving your letter, I have determined that Dr. H. C. Hofmann and other representatives of the Mexico-American Screwworm Eradication Commission, plan to attend your meeting in Gainesville and be with you at Tuxtla Gutierrez. In view of this excellent representation from the screwworm program, I have decided that we will not attempt to send an ARS representative to Gainesville, but we do hope to meet with the group when you are in Tuxtla.

We do not presently have anyone in the ARS group actively doing research on quality control procedures even though this item is included in our approved research plan. We do hope to add a scientist with interest and competence in this research area in the not too distant future, so I hope we can maintain contact with your group.

Sincerely,

Hugh

O. H. GRAHAM
Location/Project Leader

cc:

H. C. Hofmann
C. J. Whitten
R. A. Hoffman
R. A. Bram

The meeting format will be primarily informal, to provide maximum opportunity for exchange of ideas and information. We have planned to conclude with travel, by those who are able, to Tapachula, Mexico, to view and analyze quality control at the Joint U. S./Mexico Medfly Project.

Clearly, the screwworm project is such an important aspect of massive insect rearing that representation is important to us. I believe the meeting will provide important contacts and information to you or your delegate. Emphasis on computerized data-base analysis might be particularly useful.

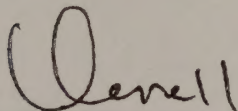
The tentative schedule is:

- August 23 - Arrive in Gainesville
- August 24-27 - Workshop meetings
- August 28-29 - Field studies in Florida
- August 30-31 - Travel to Mexico City
- Sept. 1-5 - Tours and discussion in Southern Mexico

If screwworm project personnel can participate in the meeting in Gainesville, it would be very useful and interesting to travelling participants to visit the screwworm plant.

Your comments on this proposal will be appreciated, and I hope very much for representation from ARS screwworm activities.

Under separate cover I am sending a few publications that describe our current approach to quality control.



D. L. CHAMBERS
Chairman, Global Working Group on
Quality Control
USDA/ARS
Attractants Laboratory
P.O. Box 14565
Gainesville, FL 32604

cc:
E. F. Boller



United States
Department of
Agriculture

Animal and
Plant Health
Inspection Service

Subject: IICA - Central American Screwworm Program

Date: JUN 18 1982

To: Ralph Bram, Staff Scientist
Insects Affecting Man & Animals
ARS, National Program Staff
Beltsville, MD

During a recent trip to the Inter-American Institute for Cooperation on Agriculture (IICA) headquarters in San Jose, Costa Rica, Dr. Jose Ferrer and I discussed the screwworm eradication program.

As you and I discussed last week, IICA is presently working with the Directors of Animal Health in the Central American countries in developing a program to eradicate screwworm south to a point of control in Panama. Once the current Mexican program is successfully completed to the Isthmus of Tehuantepec, then the Central American Program would be in a position to proceed.

In order to assure that the program is developed properly, Dr. Ferrer indicated that he would like to have Dr. Hugh Graham of Agricultural Research Service in San Jose, Costa Rica, for a period of two or three weeks as a consultant. It is my understanding that emphasis at this point will be on screwworm survey procedures that need to be established.

In order to assure direct coordination of this activity, I would appreciate it if you would contact Dr. Frank Mulhern, IICA, Washington, D.C. and/or Dr. Jose Ferrer, IICA, San Jose, Costa Rica, relative to this request.

I do thank you for your assistance in this regard.

William W. Buisch, Chief
National Emergency Field Operations
Emergency Programs
Veterinary Servicews

6/21
2/2
6/22/82

UNITED STATES GOVERNMENT

Memorandum

TO : RALPH BRAM

DATE: June 24, 1982

FROM : HUGH GRAHAM

SUBJECT: Letter from Richardson et al. to R. C. Bushland

Richardson is obviously determined and resilient. No real surprises in his letter to Bushland (and probably to all the Directors of SWAHRF), but we can't help but resent his unethical attack on ARS research and researchers (see p. 2, par. 3). Does Richardson seriously expect Bushland, who devoted most of his ARS career to screwworm research, to support a statement that ARS has never provided adequate facilities and staff for screwworm research?

More than anything else, the UT groups recommendations for a "smaller factory" (near Austin?) and the culturing of the "outbreak type" for release (5 or 10 generations later) reveal their ignorance of screwworm biology and program fundamentals. Their interest in reducing "the present bureaucratic superstructure" and adding "a new component of scientific involvement" is ironic - this is the group who received approximately \$230,000 of ARS funds and made no real attempt to analyze a meaningful number of the samples available to them, much less keep their promise to undertake 50% of the field work required to carry out the narrow genetic base strain test in Chiapas.

CC:

L. E. La Chance



THE UNIVERSITY OF TEXAS AT AUSTIN

AUSTIN, TEXAS 78712

Department of Zoology

June 4, 1982

Dr. R. C. Bushland
1514 Xanthisma
McAllen, Texas 78501

Dear Bush:

We realize that you are much better informed about our work than most of the Directors of SWAHRF, but we wish to keep you abreast of our current views. We appreciate the time and advice you have given us, and hope you do not find many faults with our work. Of course, it opens up more questions than are answered, and we are hoping to continue this research.

Enclosed is a reprint of our recent article published in SCIENCE. It summarizes our screwworm research since 1978. We were able to initiate this research with financial assistance from SWAHRF, The Perry Foundation, and with the cooperation of many producers in Texas, New Mexico, Arizona and California. The Texas Animal Health Commission and several individuals of the USDA/APHIS groups were very helpful as well. Because of the support by particular producers we were eventually able to obtain USDA/ARS financial support and extended our research into Mexico.

To make a long story short, we have analyzed about 18% of the material we have collected, and have a good idea of the general pattern of genetic diversity of screwworms. The USDA terminated support of this work last fall, and several individuals have been reluctant to accept our analyses. However, their reluctance is not common among other biologists. After our work and plans underwent extensive peer review, we were recently notified that the National Science Foundation intended to fund our lab to pursue further analyses of screwworms. Likewise, the Office of Health and Environmental Research of the Department of Energy continues to support our theoretical work on the dynamics of stressed populations. (Screwworms are under great stress by this program.)

We have emphasized our theoretical studies that are related to screwworm eradication. It was interesting to find out that the sterile fly technique was much more powerful than expected from earlier work, including that by Dr. Knipling. Properly done, this biological control technique eliminates populations quickly and with fewer sterile flies than have ever been used. We saw a field demonstration of this power in the studies conducted cooperatively with the USDA/ARS in southeastern Chiapas. The results were summarized in our paper in SCIENCE (see Figure 9). Since this power has not been seen to date in the screwworm program, there is more room for improvement than we realized!

The initial results suggest that a 50% to 75% or more reduction in the release rate could still be effective in eradicating outbreaks.

While we aren't suggesting that a cut this great be made without further testing, it is clear that inadequate mating between sterile and wild flies is a factor that cannot be ignored. Inadequate mating appears to be a pivotal issue for conducting an effective program at a minimal cost.

Our survey of southern regions of Mexico, indicates that the natural genetic diversity of types of screwworms is greater than in the north. (Part of the northern diversity has been removed by successful eradication.) We observed an important new type of diversity in the south that poses an ominous threat -- asexual reproduction. This possibility has not been proven, and it is unlikely to be fully understood until a serious attempt is made to culture these new kinds of flies. However, the most likely interpretation for four separate samples indicates that there is a significant proportion of screwworm females that can reproduce either sexually or asexually, without a need for viable sperm. If all the sexually reproducing competitors are removed, and asexually reproducing types began to expand their range northward, we could have an invasion of screwworms that fails to respond to the sterile fly method of eradication. In such an event, we may be back to EQ335 and cowhands, if we can find them.

There is a lot more research needed on the genetics and ecology of screwworm flies before we can reasonably predict the consequences of eradication further south. Research facilities have proven to be grossly inadequate for serious genetic research on screwworms. A recent review of screwworm research by three outstanding geneticists resulted in their primary recommendation that adequate facilities be constructed and made available to any scientists wishing to study screwworms. We enthusiastically endorse this recommendation, and hope that it receives a very high priority. Many earlier problems and the controversies between several USDA/ARS people and ourselves could have been avoided had there been adequate facilities and properly trained research staff.

We continue to be concerned about discussions of extending the eradication further into Central America. Until there is some modicum of assurance that we won't make a bigger problem than ever before as a direct result of an excessively ambitious eradication program, we believe the Isthmus of Tehuantepec is a reasonable place to stop, and then we can consider the options very carefully. Not only will we have a barrier all the way across Mexico separating us from overwintering screwworms, but we can begin to consider a way to protect ourselves from eventual reintroduction of any type of screwworm over the next several decades. We cannot depend on the current SWASS formulation to work on introductions. It does not work well in southern Mexico, nor can we expect it to work on other species from other parts of the world.

A moderate sized sterile fly factory held in readiness and combined with an early warning monitoring by state agencies as well as the USDA has several attractive features. If fewer flies need to be dropped than we once thought, then we need a much smaller factory than either at Tuxtla or the old factory at Mission. A factory population matching that causing an outbreak can be produced when needed from collections made from the outbreak. A smaller facility would be less expensive than

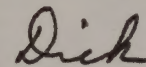
previous estimates indicated. Such a plan would require a major change in strategy, however, and a great reduction in the present bureaucratic superstructure. It would require the addition of a new component of scientific involvement in evaluating the nature of any outbreak populations, as well as routine monitoring of populations present to the south or in other places from which introductions might be derived.

For example, consider the present outbreak around Starr County. These flies seem to be very similar, if not identical, to Type-I that we have seen in Tamaulipas and Chiapas. In Chiapas, Type-I did not respond to the current factory strain when it was dropped at about 1500 flies per square mile. This outbreak has not yet been eliminated, even though drops of 4,000 to 5,000 flies per square mile have been used in combination with SWASS. According to our suggestions, initial collections would have been used to initiate cultures of this type several weeks ago, which could be brought into the fight in another few weeks. If by then the outbreak has not been eliminated, a genetically matched sterile release would be able to take it out quickly.

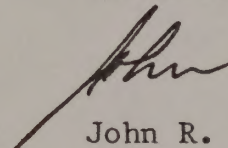
Such a plan probably could be carried out with a factory in Texas one quarter to one half that of the old factory in Mission. Having such a factory would offer a biological backup of a matched type for release on local outbreaks, as well as serve as a production backup in the event of another curtailment in production at Tuxtla.

Although we cannot be certain about many important details without much more research, we hope that we have stimulated your thinking in some new ways. We will keep you informed of our progress.

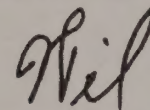
Sincerely,



R. H. Richardson
Professor



John R. Ellison
Assistant Professor



W. W. Averhoff
Research Scientist
(Retired)



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Insects Affecting
Man and Animals
Research Laboratory

1600 SW 23rd Drive
P.O. Box 14565
Gainesville, Florida
32604

June 28, 1982

SUBJECT: Report of the technical panel for the study of reproductive isolation in screwworm populations.

TO: Ralph A. Bram
National Research Program Leader
Insects Affecting Man and Animals
National Program Staff
ARS, USDA
Agricultural Research Center-West
Beltsville, Maryland 20705

THROUGH: Donald E. Weidhaas, Laboratory Director

After reading the report by Drs. Kitzmiller, Markow, and Wallace, I am compelled to voice my opinion on their recommendations. In effect, these distinguished scientists come to the same general conclusions and advanced the same recommendations that have been stated many times in the past by research scientists in ARS. I agree with their evaluation, and I encourage you and others in position to influence the funding of such research to proceed in a concerted effort to expand the research on the taxonomy and genetics of the screwworm fly. This sort of program has been overdue for a long time, at least 20 years, and quite frankly I do not understand why a comprehensive effort to study all aspects of the basic biology of the screwworm is not already in place. Obviously, at times we in USDA have been and continue to be too conservative in our judgement on funding certain types of research.

As you know quite well, it takes a combination of time and effort to accumulate the basic information needed to make meaningful contributions at the applied level of operations by action agencies such as APHIS. I believe that funds expended on this type of program will produce data of great value. The screwworm campaign has served as an outstanding precedent of the value of genetic control in the field of economic entomology, and I hope that when this fly is finally eradicated from North and Central America, we will at least have some idea of the obstacles that were encountered and conquered. Unless we in ARS follow through on some program, resembling the recommendations of the Technical Panel, we will not know why and how the difficulties in the eradication effort were overcome. In the event of failure, we will not know why.

There is not a better case that I can think of where the cost-benefit ratio is better than the screwworm eradication program. I have never met a more dedicated group of people than those involved in that effort. They are efficient and intent on reaching the objective of eradication. However,

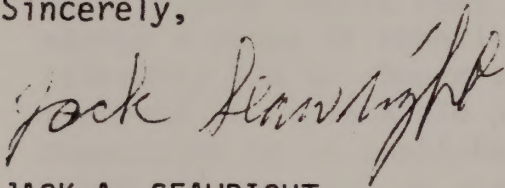
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they need help in the form of better technology and information on the screwworm fly in a tropical area. Action on several of the recommendations could result in savings of millions of dollars. For example, the development of a genetic sexing system (recommendation #7) would allow a savings of \$5-8 million/year. None of the recommendations are "pie in the sky" suggestions; there are precedents for each recommendation. Techniques and protocols for the recommended research are in the scientific literature for other dipterous insects. My point is that in the accumulation of the required basic knowledge, success is assured, if the program is adequately funded. There is no way that Drs. McInnis and Whitten can work effectively on more than two or three of the recommendations.

I urge you to use this report as a basis for the expansion of a program on screwworm genetics. It is my understanding that the "Eden-Lincoln" report was used to justify the expansion of research on the screwworm fly at Mission, Texas several years ago.

If I can be of any assistance, please do not hesitate to call on me.

Sincerely,

A handwritten signature in cursive script, reading "Jack Seawright".

JACK A. SEAWRIGHT
Research Leaser



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Oklahoma-Texas Area

Mr. Graham
Screwworm Research
P. O. Box 986
Mission, TX 78572

September 20, 1982

SUBJECT: Report of the Technical Panel for the Study of Reproductive Isolation
in Screwworm Populations

TO: Jack A. Seawright, RL
IAMARL, Gainesville, Florida

Because of travel and other interruptions I only recently read my copy of the exchange of correspondence between you and Dr. Bram on this subject. Like Dr. Bram I very much appreciate your support of the screwworm research program and your remarks about the need for increased funding. You may know that the Lincoln-Eden team also recognized this need and recently recommended that the funds for screwworm research be more than doubled.

We of course regret that Dr. McInnis decided to transfer to Hawaii as he, with almost 4 years of experience in screwworm research, could have helped us considerably had he chosen to go to Tuxtla Gutierrez. You may know that we have approval to replace him promptly and expect an announcement for a Research Geneticist to be published in October. If you know qualified persons who would like to work on screwworm genetics in Tuxtla, please call their attention to this announcement when it appears.

Fortunately, we were able to hire Dr. Robert L. Mangan in February of this year. Bob is an entomologist with extensive training in evolutionary biology as well as field experience in Mexico and I am confident that he will substantially improve our understanding of screwworm genetics, especially in tropical Mexico.

You have helped the screwworm research group in many ways for several years and we very much appreciate your willingness to continue to do so. Your incisive reviews of screwworm publications have been especially helpful. We are happy to know that we will be able to continue to call you on for advice and help.

Sincerely,

O. H. GRAHAM
Location/Project Leader

cc: D. E. Weidhaas
L. E. LaChance
C. J. Whitten
J. R. Johnston
R. A. Bram



United States
Department of
Agriculture

Animal and
Plant Health
Inspection Service

RECEIVED JUL 1 1982

Circulate
RB
Tom
Rhm *DR*

Subject:

Screwworm Research Laboratory at Mission, TX

To:

T. B. Kinney, Jr., Administrator
Agricultural Research Service

Date: JUN 28 1982

This is in response to your memorandum of May 25, 1982, relative to the Screwworm Research Laboratory at Mission, Texas. We do appreciate your comments and concurrence with maintaining the facility in a "mothballed" condition. You can be assured that APHIS personnel at the Mission location will provide the security necessary for this facility in the absence of ARS screwworm project personnel. As we agreed, the status of this facility will be reevaluated every 6 months.

/s/ Harry C. Mussman
Administrator

cc:

R. A. Bram, ARS, Beltsville, MD
✓ O. H. Graham, ARS, Mission, TX
W. F. Helms, APHIS/VS, Hyattsville, MD
R. E. Reichard, APHIS/VS, Mexico
W. H. Sudlow, APHIS/VS, Mission, TX



United States
Department of
Agriculture

Agricultural
Research
Service

Southern Region
Insects Affecting
Man and Animals
Research Laboratory

1600 SW 23rd Drive
P.O. Box 14565
Gainesville, Florida
32604

June 28, 1982

SUBJECT: Report of the technical panel for the study of reproductive isolation in screwworm populations.

TO: Ralph A. Bram
National Research Program Leader
Insects Affecting Man and Animals
National Program Staff
ARS, USDA
Agricultural Research Center-West
Beltsville, Maryland 20705

THROUGH: ^(w)Donald E. Weidhaas, Laboratory Director

After reading the report by Drs. Kitzmiller, Markow, and Wallace, I am compelled to voice my opinion on their recommendations. In effect, these distinguished scientists come to the same general conclusions and advanced the same recommendations that have been stated many times in the past by research scientists in ARS. I agree with their evaluation, and I encourage you and others in position to influence the funding of such research to proceed in a concerted effort to expand the research on the taxonomy and genetics of the screwworm fly. This sort of program has been overdue for a long time, at least 20 years, and quite frankly I do not understand why a comprehensive effort to study all aspects of the basic biology of the screwworm is not already in place. Obviously, at times we in USDA have been and continue to be too conservative in our judgement on funding certain types of research.

As you know quite well, it takes a combination of time and effort to accumulate the basic information needed to make meaningful contributions at the applied level of operations by action agencies such as APHIS. I believe that funds expended on this type of program will produce data of great value. The screwworm campaign has served as an outstanding precedent of the value of genetic control in the field of economic entomology, and I hope that when this fly is finally eradicated from North and Central America, we will at least have some idea of the obstacles that were encountered and conquered. Unless we in ARS follow through on some program, resembling the recommendations of the Technical Panel, we will not know why and how the difficulties in the eradication effort were overcome. In the event of failure, we will not know why.

There is not a better case that I can think of where the cost-benefit ratio is better than the screwworm eradication program. I have never met a more dedicated group of people than those involved in that effort. They are efficient and intent on reaching the objective of eradication. However,

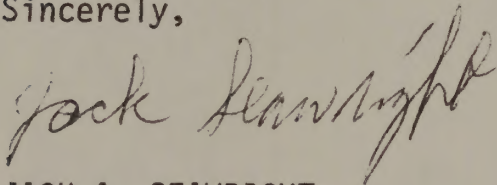
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they need help in the form of better technology and information on the screwworm fly in a tropical area. Action on several of the recommendations could result in savings of millions of dollars. For example, the development of a genetic sexing system (recommendation #7) would allow a savings of \$5-8 million/year. None of the recommendations are "pie in the sky" suggestions; there are precedents for each recommendation. Techniques and protocols for the recommended research are in the scientific literature for other dipterous insects. My point is that in the accumulation of the required basic knowledge, success is assured, if the program is adequately funded. There is no way that Drs. McInnis and Whitten can work effectively on more than two or three of the recommendations.

I urge you to use this report as a basis for the expansion of a program on screwworm genetics. It is my understanding that the "Eden-Lincoln" report was used to justify the expansion of research on the screwworm fly at Mission, Texas several years ago.

If I can be of any assistance, please do not hesitate to call on me.

Sincerely,

A handwritten signature in cursive script, reading "Jack Seawright". The signature is written in dark ink and is positioned above the typed name.

JACK A. SEAWRIGHT
Research Leaser



United States
Department of
Agriculture

Agricultural
Research
Service

National
Program
Staff

RECEIVED JUL 0 6 1982

Beltsville, Maryland
20705

June 30, 1982

Dr. J. L. Lancaster, Jr.
Department of Entomology
317 Agriculture Building
University of Arkansas
Fayetteville, Arkansas 72701

Dear Dr. Lancaster:

Thank you for your letter of June 10 requesting specific information on research accomplishments reported in the 1981 Annual Report of Livestock and Veterinary Sciences Research.

- (1) Work with ivermectin formulated in a sustained release ear implant is being led by Dr. Allan Miller. He is sending reprints of articles reporting results of this research.
- (2) Research on the antifertility agent J 2644 was conducted by Dr. Sam Rawlins. Although the work has not yet been published, two papers have been accepted by the Journal of Economic Entomology. Dr. O. H. Graham will send you xerox copies of the manuscripts.

We hope this information will be of value.

Best personal regards.

Sincerely,

RALPH A. BRAM
National Research Program Leader
Insects Affecting Man & Animals

cc:

✓ O. H. Graham
A. L. Miller



United States
Department of
Agriculture

Agricultural
Research
Service

National
Program
Staff

Beltsville, Maryland
20705

June 30, 1982

RECEIVED JUL 0 6 1982

Dr. Jose Ferrer
IICA
P. O. Box 55
2200 Coronado
San Jose, Costa Rica

Dear Dr. Ferrer:

Dr. W. W. Buisch has requested that Dr. O. H. Graham, ARS Screwworm Project Leader, be made available for 2-3 weeks as a consultant to IICA in Central America (copy of Dr. Buisch's letter enclosed).

We certainly agree with the concept and understand your desire to consult Dr. Graham on screwworm survey procedures. Regrettably, the ARS screwworm research program is undergoing a shift in focus from Mission, Texas, to Tuxtla Gutierrez, Mexico, and Fargo, North Dakota, at the present time and Dr. Graham cannot be spared during such a critical period. If your plans would permit a delay of this request until after January 1, 1983, Dr. Graham's schedule would be more amenable to a 2-3 week consultation in Central America.

As another alternative, we would be pleased to recommend a highly regarded ARS Research Scientist, Dr. John P. Spencer, who is conducting screwworm research at Tuxtla Gutierrez, Mexico. Dr. Spencer is accomplished in screwworm biology, surveillance, and other screwworm research areas; he could undoubtedly make a significant contribution in a consultant capacity.

Should you wish to invite Dr. Spencer as a consultant, please send a written request to Dr. Graham which includes the desired dates of the consultancy, countries to be visited, and a statement that IICA will provide all travel and per diem expenses. Sufficient time should be allowed for Dr. Spencer to obtain a special ARS Travel Authorization.

We hope that the alternatives proposed meet with your satisfaction. ARS looks forward to cooperating with IICA on screwworm research activities in the future.

Sincerely,

Ralph A. Bram

RALPH A. BRAM
National Research Program Leader
Insects Affecting Man & Animals

cc:

W. W. Buisch	J. P. Spencer	E. L. Kendrick
O. H. Graham	F. J. Mulhern	J. R. Johnston



United States
Department of
Agriculture

Animal and
Plant Health
Inspection Service

RECEIVED JUL 0 6 1982

Subject: IICA - Central American Screwworm Program

To: Ralph Bram, Staff Scientist
Insects Affecting Man & Animals
ARS, National Program Staff
Beltsville, MD

Date: JUN 18 1982

During a recent trip to the Inter-American Institute for Cooperation on Agriculture (IICA) headquarters in San Jose, Costa Rica, Dr. Jose Ferrer and I discussed the screwworm eradication program.

As you and I discussed last week, IICA is presently working with the Directors of Animal Health in the Central American countries in developing a program to eradicate screwworm south to a point of control in Panama. Once the current Mexican program is successfully completed to the Isthmus of Tehuantepec, then the Central American Program would be in a position to proceed.

In order to assure that the program is developed properly, Dr. Ferrer indicated that he would like to have Dr. Hugh Graham of Agricultural Research Service in San Jose, Costa Rica, for a period of two or three weeks as a consultant. It is my understanding that emphasis at this point will be on screwworm survey procedures that need to be established.

In order to assure direct coordination of this activity, I would appreciate it if you would contact Dr. Frank Mulhern, IICA, Washington, D.C. and/or Dr. Jose Ferrer, IICA, San Jose, Costa Rica, relative to this request.

I do thank you for your assistance in this regard.

William W. Buisch, Chief
National Emergency Field Operations
Emergency Programs
Veterinary Services

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oh
6/25/82

